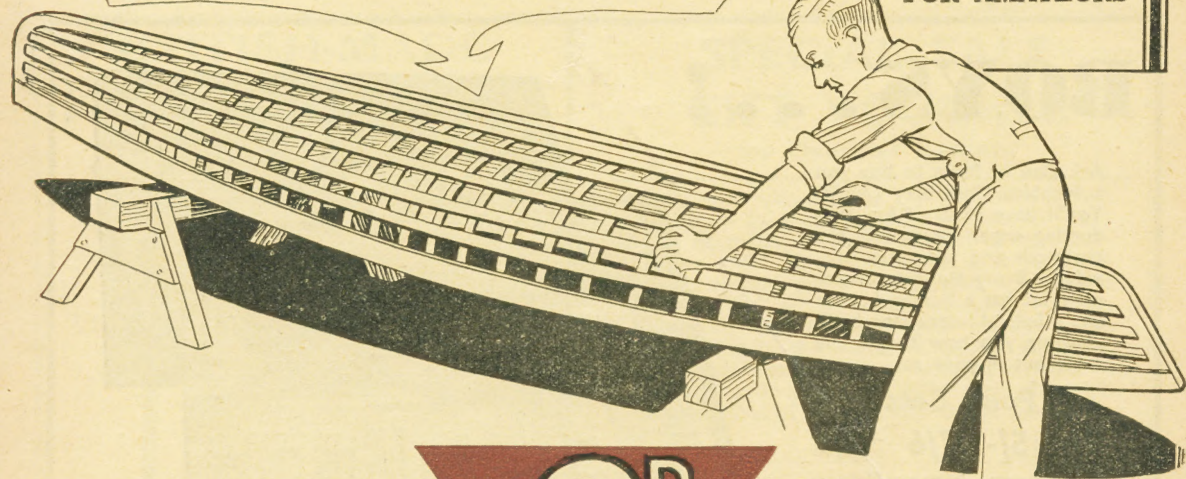


Hobbies

WEEKLY

MAKE YOURSELF
A CANOE



A HOME-MADE
TELESCOPE

★ ★ ★

A NOVELTY
ELECTRIC
WATCH HOLDER

★ ★ ★

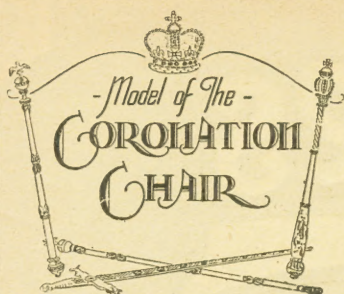
CHEMISTRY
FOR AMATEURS

April 10th. 1937

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Vol. 84. No. 2164

THE FRETWORKER'S AND
HOME CRAFTSMAN'S JOURNAL



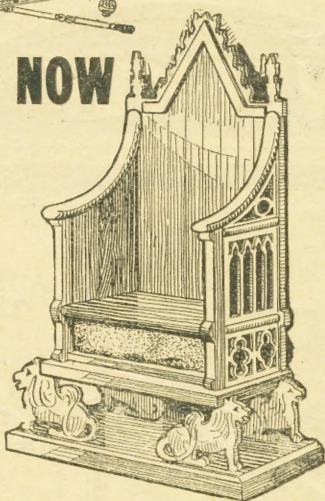
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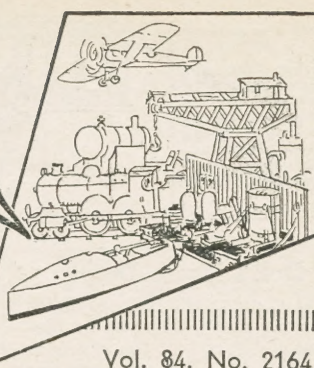
Harmless

HOBBIES CHEMISTRY SETS



Hobbies

WEEKLY



April 10th. 1937

Vol. 84. No. 2164

WE should be gradually getting ready for the summer now, and hope that there will be enough real warm weather to entice us on to the river. Do not let that happen and then have no Canoe ready to use. Here is one this week which anyone can make and which has actually proved "the goods." Moreover, the author shows how you can make a carrier for it to attach to your cycle. So if you have not a river running at the foot of the garden you can quite easily hitch up the canoe and take it to the nearest water. Why not get a pal interested in it and make one for the pair of you?

I AM delighted, but really not surprised, at the popularity of our design of the Coronation Chair. Hundreds have already been made and sold and one reader sends in a helpful suggestion in connection with the bracket we published. He says the design for that if drawn out double the size, with shelf and supports omitted makes an excellent shape for a Hymn Board. The size is then about 2ft. by 1ft. and it is simple to add rails for the hymn numbers. These figures, by the way can be taken from our recent design of numerals or the colour transfers can be laid on suitable squares of wood.

IF you are really keen on photography you would be interested in a new Photographic Annual just published by Henry Greenwood & Co., Ltd.. It only costs 2/- but contains no less than 780 pages of which 64 are really fine photogravure reproductions. Copies can be obtained from 24, Wellington Street, Strand, London, and will prove a mine of information to any camera user.

TALKING of cameras it may seem a far cry since the Holiday Photographic Competition of last August, but such are the times taken in moving things about this old world of ours that we are only now

able to give the results of the Overseas Section.

The first prize is gained by G. W. Potter of Toronto, Canada who submitted a "backwoods" holiday scene called "The Camp Cooks." Second Award goes to J. A. W. Sholeye of the Government College, Ibadan for a snap of some coloured students enjoying a swim. He calls his picture "Amphibians," which is quite a good title. Commended is P. Winter of Nyeri, Kenya who sends a snap of a very interesting African sign-post, this print being titled "Where to Now?" and with the vast number of names on the post (even New York) it would indeed seem a question. M. C. Peterside of Umuahia also gets commendation for his print showing (and called) "Holiday Making in Nigeria."

AS mentioned last week the Index for Volume 83 is now ready and costs only 4½d. post free. It is worth a lot more than that really because it forms a ready means of reference when you want any particular article or are looking for a subject which has previously appeared, but which at the moment has slipped your memory. This Index, of course, covers issues up to the end of March, and is obtainable at the usual Hobbies Branches as well as from me.

READERS of our Stamp Page will no doubt remember the Competition we had in an issue in January. I am glad to find there was a great deal of interest in this and the sug-

gestions sent in have given our expert much food for thought. He has promised to let me have an article dealing with the various points raised by the readers in their varied and helpful suggestions. In the meantime I must announce that the prize of a thousand different stamps was awarded and has been sent to J. W. Haley of Plaistow, London. Particulars of the competition will appear on the Stamp Page later.

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Next Week's Design—Postcard Frame

Correspondence should be addressed to: The Editor, Hobbies Weekly, Dereham, Norfolk, and a stamp enclosed with the Reply Coupon from Cover iii if a reply is required. Particulars of Subscription rates, Publishing, Advertising, etc. are on cover iii.

Send your own simple tips to The Editor, Hobbies Weekly, Dereham, Norfolk. Keep them short and add rough pencil sketches if possible.

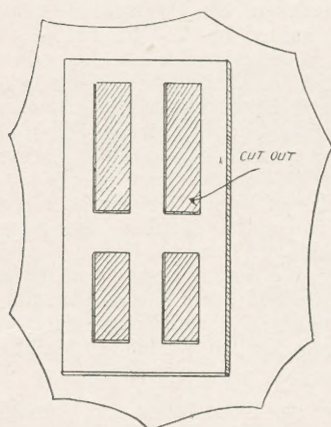
HINTS AND TIPS



For original Tips published the sender will receive a Hobbies Self-Filling Fountain Pen. We cannot acknowledge or print all tips sent in.

Doll's House Doors

TO improve the look of doll's house doors, cut them in plywood and mark out the panels as on real doors. Then cut these out



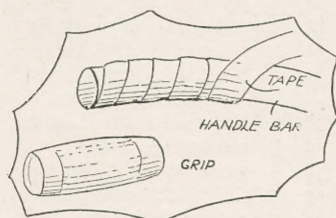
to the depth of the first ply, and stain them. This greatly improves the look of the doors, and makes them much more realistic.—
(W. H. Yells).

Polishing New Shoes

NEW shoes that will not polish easily should be rubbed with the cut half of a lemon. Let it dry, then polish in the usual way. Finish with a velvet pad or soft cloth.—(J. Montgomery)

Handle Bar Grips

THIS tip will undoubtedly be helpful to many cyclists who find their rubber grips on the handle bars slip off. The best way



to stop it is to bind the bar with insulation tape as shown. Then put the grips on, and you will find they hold quite firmly.—

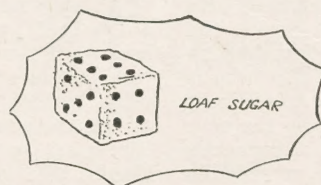
(T. Dooley).

Cycling Tip

SOME cyclists carry bottles of drink with them when on a run. Those who do, will find that a cork which is both airtight and watertight a useful friend. Soak an ordinary cork in paraffin wax for a few minutes before using and an airtight and watertight stopper is obtained. A short length of adhesive tape stuck over the stopper and round the bottle neck will keep the bottle leak-proof while cycling.—(Stanley).

Dice Games

HERE is a useful tip to the people who play dice games. If you have broken or lost your dice, here is a simple way of



making them. Get one or two loaf sugars, and a paint brush, and some ink. Then dip your paint brush in the ink and then paint the dots on the loaf sugar as in diagram. When finished you will find it quite successful.—

(Michael Keeling).

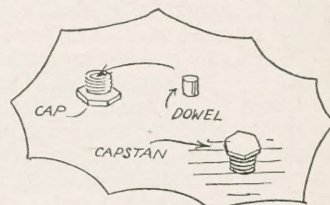
A Sea Hint

IF you want to complete a model of the "Queen Mary" and the sea in a most realistic way, this method is easy and helpful. Procure a small quantity of white plasticine and model it on to the base forming the waves at the bow and the wash at the stern. A modelling tool or the fingers may be used, and it will be found that the plasticine sticks to the wood. Paint the base over with green Crusoe Enamel and leave the "white caps" alone. The result will be very pleasing indeed.—

(A. M. Chisholm).

Capstans on Boats

IF the caps of tooth paste tubes are saved, they sometimes become invaluable for capstans on boats. A good way for fixing is to



fill the hole with dowelling and then the dowelling can be glued down. A nail can be driven through the top of the cap into the dowelling if necessary.

(John L. Peel).

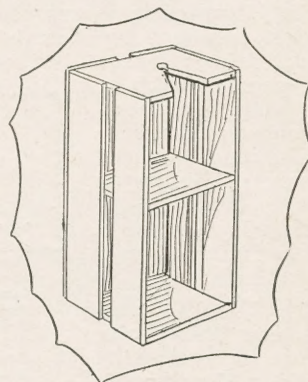
A Simple Knife

GET a piece of thin tin about 4ins. by 1in. Then mark $\frac{1}{2}$ in., and bend it on this line. Then get a razor blade and fit it in at one end of the tin as shown and hammer the tin together.

(H. F. Williams).

A Work Bench

A SMALL but very efficient work bench can be made for fretwork out of a double sectioned orange box. The



accompanying sketch illustrates the necessary alterations needed for fretworking. Hooks can be screwed inside the partitions for the purpose of hanging tools.—

(S. Parkinson).

A STRONG SIMPLE TWO-SEATER CANOE

HERE are particulars and illustrations for making a sound water craft, which has been tested and proved worthy by the writer.

Some amateur boat construction is often lamentable, but the very length and fulness of the method described here, leaves little to stumble over. It is for this reason that we have not curtailed it in any way, but explained every point in turn.

The boat itself, if built according to instruction, is a stout but easily handled craft, reliable in every way.

In designing this craft, consideration has been given to the numerous points. Strength has been secured by the use of thick canvas, a large number of ribs and stringers, blocked joints, etc. A considerable beam and deep U section ensure stability. If well trimmed the boat is very difficult to overturn. For a craft of this type, it is slightly heavier than usual, but is still very much lighter than a wood-built canoe. On the other hand it is much stronger and far more stable than the average amateur-built craft.

Construction and Expense

At first sight, the construction would appear to be beyond the power of the amateur. This has been proved not to be the case. It is a long task, but duplication of ribs and other parts allows for faulty work in construction without undue consequences. The result is far beyond anything usually attempted, and provides a useful steady craft that will stand up to anything likely to be encountered on river or sea.

The lines of the boat are pleasing, and make it graceful as well as serviceable. This is especially

noticeable in the cockpit which, being curved and narrow in the front, gives better protection from any water coming overboard.

What about building yourself a canoe for the summer? This article is of a boat which has been made and is detailed in every step of the construction. You can't go wrong.

As fully described, the cost will be between £3 10s. od. and £4, but economy can be effected by dispensing with the copper keel or using two layers of laths instead of "half round" for stringers (see tent). Together, these alterations will reduce the cost by about 14/-. A lighter grade of canvas will also reduce the expense.

Even without these cheaper alterations, the craft is superior to many factory-built models at double the cost.

Any room or shed will suffice for construction until after the framework is made, when the boat can be moved or stored anywhere. Do not move it before this or a warp in the keel will possibly result. Keep the boat dry until the canvas has been painted, when it can be kept in the open (upturned), but should be allowed to dry out occasionally after it has been wet.

Read through the article carefully, referring to the diagrams where necessary, and then lay out the keel as shown. The work is described in the correct stages of procedure, the materials needed for each stage being given first.

Materials

These can be bought as the work proceeds. If the beginner is unable to obtain the materials

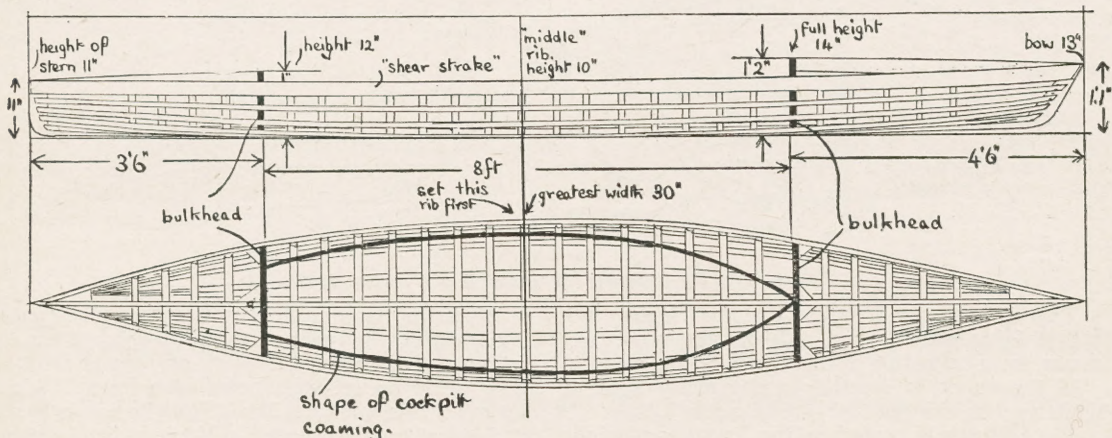


Fig. 1—A side view and plan of the framework, with dimensions

suitably, especially the canvas, we shall be pleased to supply him with the address of a reliable dealer if a stamped addressed envelope is enclosed.

The canvas is the most important and most expensive item of all, and great care should be taken in obtaining it. A defect in the canvas may ruin the craft for rough work in the river or open sea. The type found excellent is 15oz. white duck canvas bought from a ship's chandler or ship store.

warped, nor split in any way. Spruce will serve if red deal or Oregon pine is unobtainable, but it is much more likely to contain the defects given.

The laths for the ribs will be full of defects, and any which snap when bent should be discarded.

No iron at all must be used in construction. Brass screws, copper nails and tacks can be obtained from a ship store or hardware dealer, and brass nails from a boot maker.

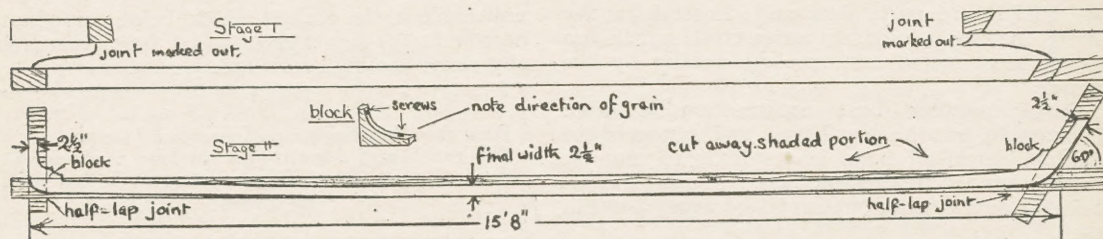


Fig. 2—Details of the Keel

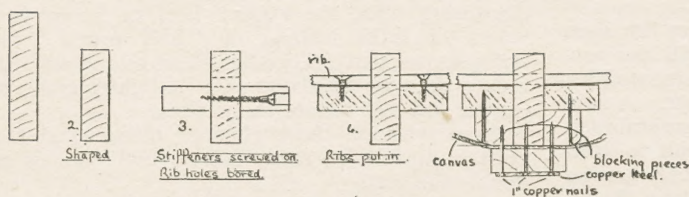


Fig. 3—Sectional drawings showing stages in keel construction

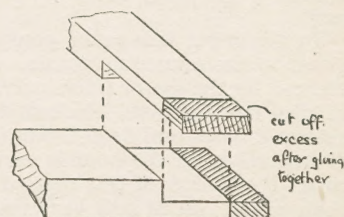


Fig. 4—Half-lap joint in keel and bulk head

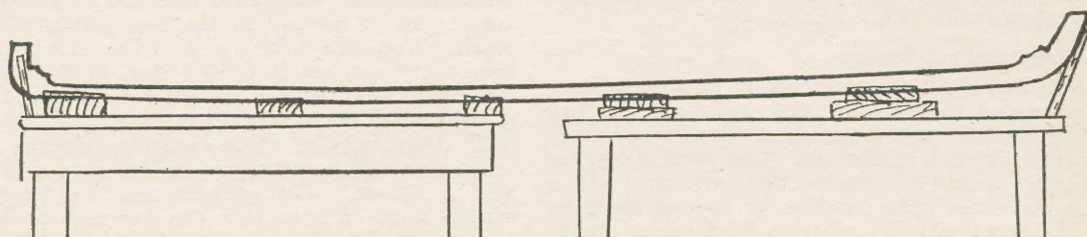
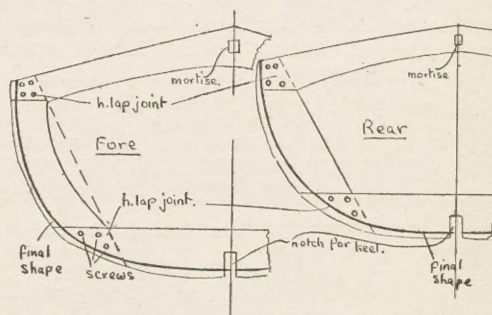
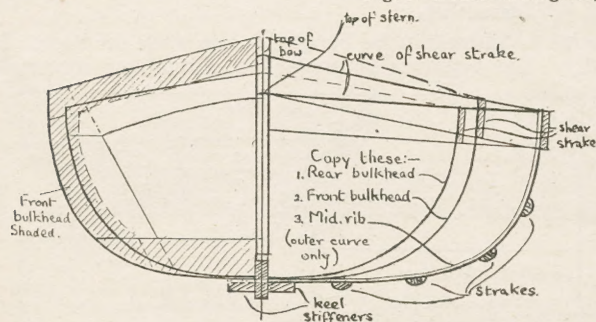


Fig. 5—How to arrange supports for the keel



Figs. 6, 7 and 8—Showing the bulkheads with various details

This is heavy and makes the boat heavy too, but it is untearable and will stand almost any strain, even to hitting a sharp stake in the river.

If the canoe is wanted exceptionally light, a lighter grade can be used—10 or 12oz.

The keel should be as free from knots as possible, and care taken to see that it is neither twisted,

Either red lead paint or waterproof glue can be used to set the joints. "Marine glue" can be bought at a marine dealer, or, better still, a thoroughly secure waterproof glue from Hobbies Ltd. (1/6 or 1/9 a tin). Marine glue is simple to use and is just heated, poured in the joint and allowed to set.

Do not use varnish paint at all, as it does not stand the water. Any marine paints are suitable, or a good enamel such as Robbialac.

Stages in Building

The keel is shown in Figs. 1, 2, 3 and 4, and materials needed are 1 doz. 2½ in. brass screws, 1 piece of deal 20ft. by 4ins. by ¾ in., 2 pieces 14ft. by 2ins. by ½ in.

The first task is to joint on the stern and stern posts. Cut off from the keel piece 1ft. 3ins. and

a series of sawing trestles form an excellent base for these. The support must be firm, however, and temporarily immovable.

Blocks are cut to fit the underside of the keel, taking care that it is supported on each, and not sagging at all. Four or five are sufficient. The stem and stern must be fixed vertically by laths lightly nailed to them and the support. Look along the boat from one end, sighting the stem and stern posts to see that there is no twist. This is essential.

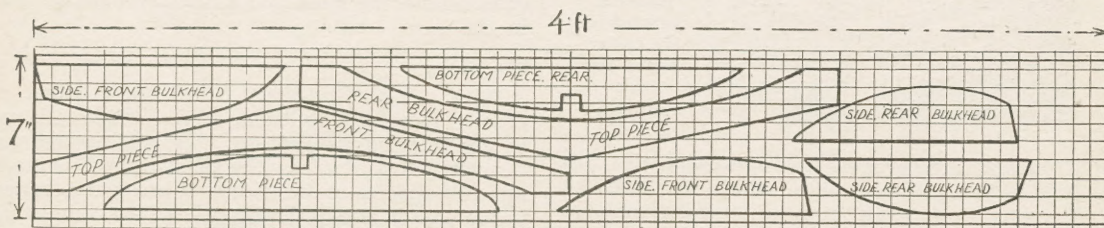


Fig. 9—How to mark out the bulk heads with spare to allow for knots

2ft., and join each to it by a half-lap joint as shown. The stern is set at an angle of 60 degrees, and the stern post at right-angles. Screw these joints in position temporarily, not driving the screws home, but just enough to hold firmly.

Lightly nail a lath across, as shown, to hold them during shaping. Do not move these laths till the canvas is put on.

Next sketch out the curve of the whole keel and saw off the waste wood. Do not split it up, as it can be used in other parts of the boat. Shape with a plane and spokeshave and finish with glasspaper. Set the joints in waterproof glue or red lead and screw home.

Stiffeners must now be screwed on each side of the keel. These are 14ft. long, 2ins. wide, and are

The Bulkheads are of wood 4ft. by 7ins. by 1in., as seen in Figs. 6, 7 and 8. The whole framework depends on the accurate shaping and fitting of these. The curves are shown on squared paper, and if a series of squares 2ins. wide are drawn on a large piece of paper, they can be easily copied and traced off.

First the shaped pieces are marked out on a board 1in. thick, cut these out and trim to shape. Lay the four pieces out on the bench in their correct final position, the two side ones on top and the places where they cross are marked along the edge with a fine pencil or knife, underneath as well.

These lines mark the position of the half lap joints which are cut as shown.



Fig. 10—Bending a lath

planed down to a point at each end (plane one side only). The joint is either red leaded or glued with waterproof glue and about 6 brass screws screwed in from each side. The screw heads must be well countersunk and should grip the stiffeners on the opposite side.

Take care to avoid splitting, as the screws are rather heavy in comparison with the thickness of the wood. When in position the stiffeners must be rounded off on the underside (the keel must not be, the reason will be seen later), and finished off with glasspaper.

Cut blocks to size from the spare wood and screw in position at the bow and stern as shown, noting direction of grain of the blocks.

The keel must now be supported on chocks, (Fig. 5), preferably off the ground. A long bench or

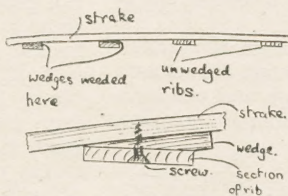


Fig. 11—Wedging a rib

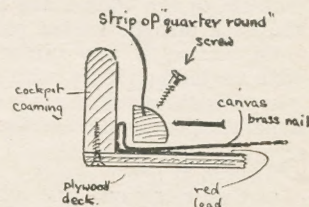


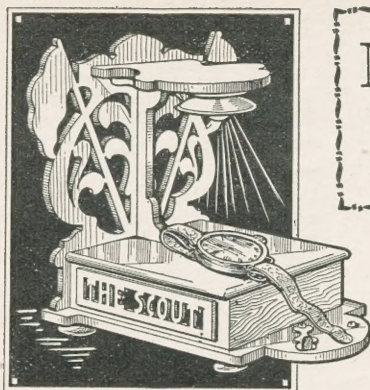
Fig. 12—Fixing canvas to cockpit

Fit the two sets of pieces together, gluing and screwing the joints. Make a notch for each bulkhead to fit over the keel, and screw through from the keel stiffeners (3in. screws).

The top pieces to support the deck are placed in position next. They are 4½ ft. and 3½ ft. long respectively at the bow and stern as shown, and are cut from the wood left over from the keel. They are fastened to the stem and stern piece with half lap joints and to each bulkhead with a single mortise and tenon. The mortise is cut out with a chisel and the tenon fitted in.

Blocks are glued and screwed in position where the top pieces join on to the stem and stern, and to the bulkheads.

(To be Continued)



BEDSIDE ELECTRIC WATCH STAND

Full size
patterns
printed in
the centre
pages for
this
simple
novelty.

THE picture herewith is of a novel little Bed-side Watch Stand into which is fitted an electric lamp run from a pocket flashlamp battery. The battery itself is contained in the box-like base in front of which is the on-and-off switch. Immediately above the box, and facing downwards is a bulb and reflector.

Thus, when the completed watch stand is by the side of your bed, all you have to do is turn the handle across to the "on" position, and the lamp immediately lights to show down on to the watch lying on the box.

Full size patterns for the various parts concerned are shown in the centre pages, and a few pieces of wood are all that is necessary to complete the article. All parts are cut with the fretsaw, and the various dotted lines and lettered parts show the construction quite clearly.

Cut out all the parts in 3/16in. wood, with the exception of the overlays on the sides. These are for the words "The Scout," whilst a topical emblem of the Patrol flag is also incorporated in the back upright fretted portion.

Of course, if you prefer to make the article without linking it up with the Scout Movement, you can easily omit the side overlays and you have a practical everyday article suitable for anyone.

The Construction

Cut all parts out first, and mark on them any positions for adjoining pieces, and get a good idea of how the parts fit together, before cleaning off the paper remains. On the base stands the back, the two sides and front of the box. The front goes between the sides, but the back overlaps. All of it is intended to stand on to the base, but should not be glued there.

Screws only should be used for fixing so that when the battery has to be replaced, that part can be taken away easily. A top is glued and screwed to the box, then an upright portion (B) fits between this and the projecting part (A) which is tenoned into the back. Above this, in turn, is the larger piece (C).

Notice that under part A is a circular washer to provide the thickness for the bulb fitting. Place the bulb and its reflector in position, then run a groove along the top face of A, so the wire can be carried from it through the hole in the back

between that and the part C. The wire then runs behind the back and down through the hole in the base.

The Wiring

With a V-tool or sharp chisel run a couple of grooves along the underside of the base, as shown by the lines on the pattern. The wiring diagram herewith illustrates how the electrical side is made up. Two pieces of fine copper or brass are screwed to the base in such a position that they connect up with the metal tabs on the battery.

From one of these brass fixtures on the base, the wire is run to the "on" position. The handle is screwed on as shown and from underneath, the wire is run under the base up to the lamp.

The return circuit is, of course, made from the piece of brass on the bulb down to the other connecting brass on the base so leading again to the battery.

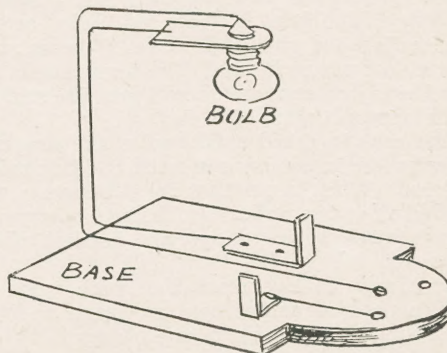
Use copper wire throughout and bed it nicely into the wood so it does not project above the surface. The switch handle is cut from brass, one end being bent up to make it easier to hold.

"On" and "Off"

Screw it on to the projecting front platform, then drive in a round headed screw at the position marked "on" and "off." The "off" screw need not project through the wood, but the "on" one must in order that the wire beneath can be connected up and soldered to it.

To lift the whole thing slightly, four little Hobbies No. 19 toes should be glued on the underside of the base, then the whole thing can be finished off with stain and polish or with suitable colour.

The necessary wire, bulbs, battery, etc. can be bought at any stores or electrical shop and Hobbies Ltd. can supply a suitable parcel of the wood if you wish.



A diagram of the Wiring

A POWERFUL POCKET TELESCOPE

FOR holiday making, scouting or hiking, a good telescope is a welcome companion. Now a good instrument is a somewhat expensive article to buy, but with care and a little trouble it is quite within the scope of any handy fellow to make one for himself at the cost of a few shillings.

The one which is the subject of this article is really powerful, having a range of about 5 miles, and not to be confused with some of the cheap, highly polished affairs with an inferior lens and a lot of plating.

It will knock such an article "into a cocked hat." Strictly speaking it is not a pocket telescope but nevertheless it can be carried in an outside coat pocket.

The first items to be considered are the necessary lenses and many readers will doubtless wish to know where they can be purchased. For this telescope an object glass, achromatic, of 1-5/16 in. dia. and focus of 12 ins. is required. For the eyepiece, the following plano-convex lenses.

A—3/8 in. dia., 1 1/2 in. focus.

B—1/2 in. dia., 1 in. focus.

C—3/8 in. dia., 1 in. focus.

D—1/2 in. dia., 3/4 in. focus.

The cost may vary but if bought from the firm, whose address can be supplied on application to the Editor, accompanied by a stamped addressed envelope, will cost 4/6 for the object glass and 8/6 for the four eyepiece lenses. These are good class optics, not blobs of glass or cheap toy lenses.

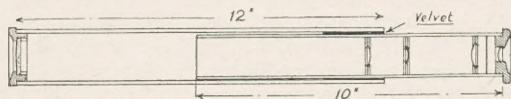
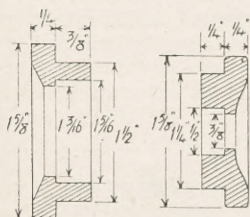


Fig. 1—A section of the instrument



Figs. 2 and 3—Eyepiece mounts

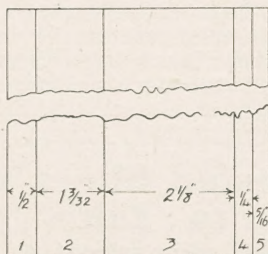
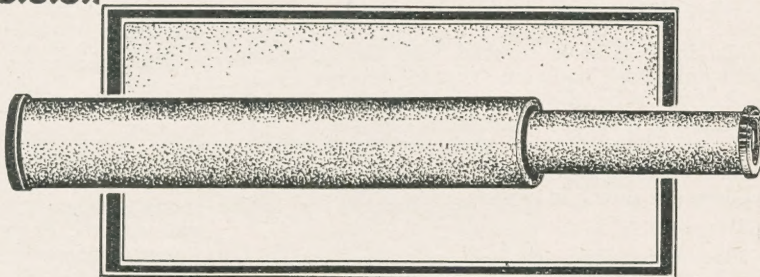


Fig. 7—Spacing ring pieces

A section of the telescope is given in Fig. 1. Both the inner and outer tubes are made of brown-paper, rolled round suitable wood formers. Start with the outer tube first.

Get a sheet of brown paper, 14 ins. wide and say 2 ft. long. A wooden former of 1 1/2 ins. dia. will be required. Cover the table with a sheet or two of newspaper, lay the brown paper on, place the former on top and roll the paper tightly round to just cover the roller.



Have ready a jar of thin, hot glue, and glue the remainder of the brown paper. Now roll steadily up, pressing the layers of paper into contact by rubbing down with the hand to avoid bubbles.

To this add a second sheet, or more if necessary, according to the thickness of the paper, until the wall of the tube is from 1/8 in. to 3/16 in. thick, 1/8 in. is usually enough. Take the utmost care to avoid getting any glue on the former or the tube will be difficult to remove. In fact, when gluing it is best to keep within a 1/4 in. of the edges of the paper.

Cutting the Tube

When the tube is hard, cut a piece off each end to reduce its length to 12 ins. The best way of doing this is to wrap a narrow strip of stiff white paper round the tube and draw a pencil line against it.

Then press a sharp knife on the pencil line while rolling the tube away from you until it is cut right through.

Now withdraw the tube from the former. If it fits tight, hold it in one hand and drive the former out with blows of a hammer. The tube must now be covered with a fine grained American cloth or Rexine.

Cut a piece of this material 13 ins. wide and long enough to go round the tube and overlap 1/2 in. Glue this and roll round.

Before the glue has time to set, trim off the surplus at one end flush with the edge of the tube, the other end is snipped with the scissors and tucked neatly inside. The interior of the tube should now be blacked with a dead black stain. To mix a suitable one, work a little ivory black or lampblack to a paste with some french polish and thin for use with methylated spirit.

Line with Velvet

After blackening, and when dry, cut a piece of black velvet ribbon, 2 ins. wide, long enough to go round the inside of the tube, with the meeting edges just butting together.

The end of the tube which has the covering

tucked inside should be glued for a depth of zins. and the velvet inserted and pressed down without creases.

For the inner tube, roll brown paper round a wooden former $1\frac{1}{4}$ ins. dia. as described for the outer one. The wall of this tube will be thinner however, probably $1/16$ in. will be enough, as when covered with the American cloth it must slide freely though closely in the outer tube. Test this, and if too loose add another layer or two of the brown paper. Take a little trouble to get this right.

The inner tube is covered with the American cloth only, both ends are trimmed level with the ends of the tube, not one tucked inside. Blacken the interior with the black stain and lay aside to dry.

The wooden mounts for the object glass and eye lens are shown in section Figs. 2 and 3. They

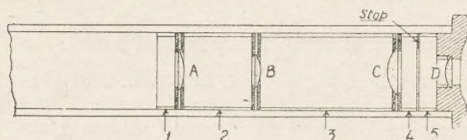


Fig. 4—Cut away side view showing position of lens

should be turned in beech, or other hard close grained wood, to the dimensions given and tested for fit in the tubes.

When satisfactory, both should be stained black and the outsides (those parts showing outside the tubes) polished or varnished for appearance sake.

To mount the lenses, drop them inside their respective mounts and fix in place by means of a cardboard ring, glued round. These rings should be blackened before gluing in and the utmost care should be taken to avoid any glue getting on to the lenses.

When this is done, the inside face of each lens should be polished with a soft cloth and the mounts glued in the tubes. By the way, be careful to fix the object glass with its curved face outwards and the eye lens with its flat face outwards.

The Lens Arrangement

At Fig. 4 is an enlarged view of the lens arrangement in the inner tube, which forms the eyepiece of the telescope. This should be carefully studied so that the position of each lens can be noted, also whether its flat face is set inwards or outwards. For the benefit of the uninitiated, lenses A and B form the erector combination and C and D the eyepiece proper. The business of the erector combination is to re-erect the image before it passes through the eyepiece, otherwise the image would appear upside down. This does not matter to an

astronomical telescope but it would render a terrestrial telescope useless. Now to mount the lenses A, B and C.

For each of these cut a set of three discs as shown in Fig. 5, with an outside dia. of $1\frac{1}{4}$ ins., the inner circles being dependent upon the size of lens. For instance, those illustrated are for lens C. Disc b has a hole cut exactly in the centre the same diameter as that of the lens to be mounted. The holes in discs a and c are $\frac{1}{8}$ in. less in diameter.

The Discs

These discs can be cut from $1/16$ in. fretwood but disc b should be thinned down by rubbing with coarse glasspaper. Alternatively, disc b could be cut from thick veneer or hard card, $1/32$ in. thickness, not less. Glue discs a and b together and then dead black all three. Having made the mounts, place the lenses in the centre holes and glue discs c on top, taking care the lenses are mounted firmly and not likely to shake or wobble. A section of a lens thus mounted is shown at Fig. 6, which should make it quite clear.

These lenses can be arranged inside the tube at certain definite distances apart by means of spacing rings numbered 1 to 5 in Fig. 4.

Spacing Ring Pieces

To make these, get a piece of moderately stiff cardboard, 4 sheet Bristol board is about right, 8ins. long, and cut the strips 1 to 5 in Fig. 7 the given widths. These are blackened and rolled into rings to slide easily in the tube. The stop, seen in Fig. 4, is a $1\frac{1}{4}$ in. dia. disc of thin metal, tinplate for example, with a $\frac{3}{4}$ in. hole in the centre. This also is blackened. Now to assemble.

Take ring 5 and push down the tube until it butts up against the eye lens mount. Follow on with the metal stop and ring 4. Now push down lens mount C, then ring 3, follow with lens B, ring 2 and lens A.

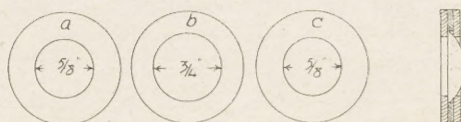


Fig. 5—The three mounting discs Fig. 6—A lens section

Now, where ring 1 will come apply a spot or two of glue to the inside of the tube and push the ring down in place. Great care should be taken to assemble the lenses correctly, also, each should be cleaned with a soft cloth first and not touched afterwards.

The telescope is now completed, and if carefully assembled and the lenses accurately centred in their mounts and correctly spaced in the tube, will give much pleasure and satisfaction in use.

A Special Coronation Design Sheet is coming shortly. Be sure to take your Hobbies Weekly regularly

FIRE AND FLAME

HOME CHEMISTRY



WE take these two marvellous and, yet everyday substances far too much! for granted, though they are two of nature's greatest marvels.

Volumes could be written about both subjects, but for our purpose here we will briefly study the simplest of flames. Almost every time you carry out chemical experiments you make use of your Bunsen; have you ever discovered that the flame is a hollow cone?

That may surprise you, but there are two ways of testing the assertion. First, hold one end of a glass tube in the inner zone, which is most apparent when the holes at the base of the Bunsen burner are uncovered, so that air is admitted. Now apply a match to the other end of the glass tube, and a small flame will immediately appear. The fact is that the inner zone of the flame is a cone of unburnt gas. By your experiment you have diverted the unburnt gas and have ignited it at the end of the tube.

The second experiment is quite simple. Just hold a sheet of stiff white paper or cardboard right over the top of the flame, lower it to the half-way mark and jerk it away again very quickly. On examination afterwards you will find a circular scorch mark, thus proving again that the flame is in reality a hollow cone.

Have you ever wondered why a candle flame should be luminous? The phenomenon is so common that many readers may be startled by the mere thought of this question. However, there must be an explanation, and it lies in the composition of the candle itself, not the wick.

You see, a candle is made of wax; when you light the wick, the wax at its base is melted; the molten wax ascends the wick by what is known as capillary action, and the flame is produced by the combustion of this wax.

Fire and its causes

A candle flame is very complicated as compared with some other flames, because a candle is composed of a mixture of stearic acid and paraffin, and heat produces a general decomposition of these substances. Getting right down to the basic fact, then, the conclusion is that fire is a good example of chemical action.

Take an ordinary fire in your grate at home. The heat breaks up the matter of which the fuel is composed, releasing other substances of which carbon and hydrogen are the most important.

Atoms of carbon combine with atoms of oxygen

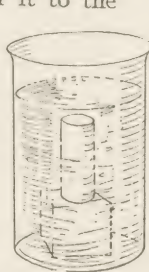
to form carbon dioxide. Atoms of hydrogen combine with other atoms of oxygen, water vapour resulting. These gases, and the smoke, which is composed of tiny particles of carbon, escape by way of the flue.

It is interesting to note that various substances produce widely differing types of flame. We have learnt by our manufacture of fireworks that a whole range of colours is obtainable from different chemicals, used for this purpose mostly in powder form.

Distinctive Flames

Gases have their distinctive flames; hydrogen, for instance, burns in air with a flame that can hardly be seen in daylight, as it is very nearly colourless. Carbon monoxide gives a bright blue flame, whilst ammonia burnt in oxygen produces an exceedingly yellow flame.

How are flashlight powders made? is a question which some of you may have on the tips of your tongues. In these days of much photography, flashlight work is not quite so remarkable



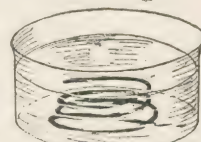
Fire under water



Proof that a candle flame is hollow



Proof of a hollow flame by the scorch mark



Make fuse in a solution of potassium nitrate

as it used to be, yet almost everybody having their photograph taken at a dinner or dance, wonders, for a moment, what the stuff that makes such a bright flash really is.

Oh, yes, it is well known that magnesium ribbon produces a brilliant light, but nowadays a powder is mostly used. It follows that powdered magnesium is the important factor; it is mixed with an equal quantity of potassium nitrate and a similar amount of powdered sulphur.

A Red Light

A red light of equal brilliancy is produced by adding strontium nitrate, or if boracic acid is used in place of the strontium, a green flame will be produced. You are not advised to try and mix these powders, as they so quickly ignite, and in no circumstances must they be ground or rubbed together when the mixing is in progress.

Should a friend, who is a photography enthusiast, present you with a sample of flash powder, please do not experiment by holding a lighted match near it. You will jump away in double quick time if you do!

Instead, use a fuse, and as this is often a useful item to have in stock, this is how you can make some.

All you need is some soft, thick string. Unless it is about as thick as a cord on a dressing gown, twist several lengths together in the way that girls braided their hair in those far-off days when it was long enough for the purpose. Pour some water into a suitable vessel and add as much potassium nitrate as it will dissolve, then soak the string in this concentrated solution. You need only leave it for half-an-hour or so, then remove the string and hang it on a nail to dry.

A somewhat eerie effect is observed if you suspend a length of this fuse from the ceiling, light the lower end of it, and turn out all the lights in the room. The flame will be seen to climb steadily up the cord until it reaches the top.

As every good chemistry student is always

seeking to mystify his friends with his knowledge and his tricks, here is a good one—fire burning under water. Sounds impressive, and it is!

Take your old friend potassium nitrate (a supply of which is included in the "Hobbies" chemistry outfits), some powdered charcoal, sulphur, and strontium nitrate, and mix them up in the proportions 5:1:2:1. Make a strong paper tube, not more than 3 inches in length, and stuff the mixture into it. Close one end of the tube and cover with varnish to make waterproof.

Now hold a match at the open end until the tube catches fire, and place it, open end downwards, on the bottom of a glass jar, or better still, on a short block which stands on the floor of the jar. The fire will continue until the mixture is used.

And now, the reverse; how to make articles which *should* burn, incapable of burning. Simple. Just soak the article, say a handkerchief or a piece of material, in a solution of photographers' ordinary hypo, and dry it thoroughly.

Produce this in due course, hold it in the flame of a candle or bunsen, and wait for it to catch alight. You will have a very long wait indeed.

SIMPLE MODEL FENCING

HERE is an excellent way in which you can make fencing for your model farms, railways, etc. The fencing copied is well-known in the country, being made up of stakes and wire with posts sunk in the ground at intervals to support it in position.

To make the model fencing first procure a block of wood as (A) 6ins. long, the width of this will depend on the size of fence you wish to make, but 1½ins. stakes will suit quite a lot of table-model scales, in which case the width of the block will be 1in.

For this size, the distance apart of the stakes may be ½in. but for very precise modelling a trifle less would be better. However, ½in. spacing gives quite a good effect, therefore the block (A) should be marked off by lines across at every ½in. position. As (A) is 6ins. long there will be eleven of them. At each position now cut a channel right across ½in. by ½in.

Next take a second block (B), also 6ins. long, and 1in. wide and fasten it at one end with a single screw so it will swivel.

Wiring

Procure some small gauge wire that will bend easily and is comfortably worked, and also make a large number of "stakes," 1½ins. long—old matches slightly trimmed will do admirably.

To make the fence, turn the cover over the lower block and insert a stake in the first channel. Now take two lengths of wire, and bending these double put them over the protruding ends of the stake, giving several twists as shown.

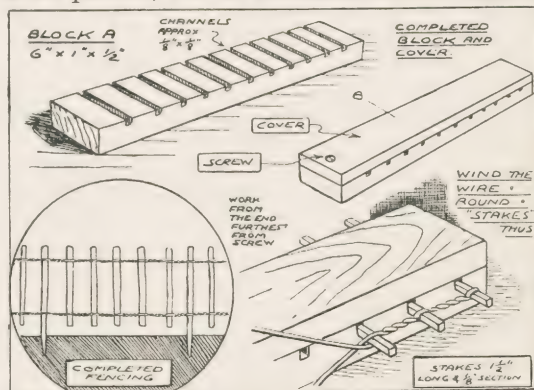
These turns should be fairly close to tighten the wire loops and hold the stake firmly; they

should also continue till the second channel is reached. Another stake is inserted here and the wires are carried round its ends, and again twisted till the third stake position is arrived at. Here the process is repeated, and so on, down the length.

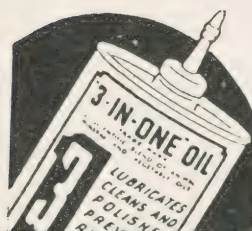
At end of the block the whole section of fence is lifted out (by swivelling away B) and is moved up to the end, and the repetition of actions is thus carried on *ad lib*. When the lengths of wire are exhausted it is not hard to finish the ends off at a stake, and put fresh loops round to continue without apparent break.

Support Posts

For supporting the fence separate posts can be erected, or every sixth stake can be 2ins. long, the section then being held by boring holes in a base-board at these positions. The former method copies more nearly actual practice. The fence is not painted, but can be stained down if desired.



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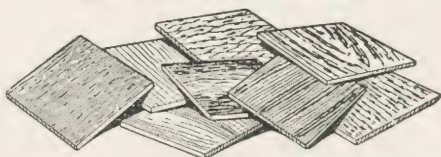
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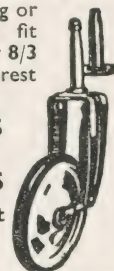
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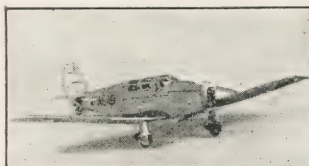
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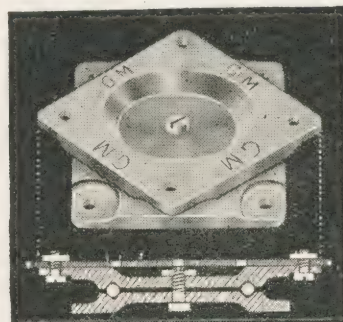
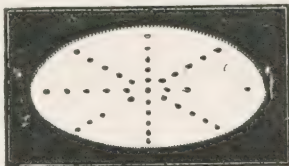
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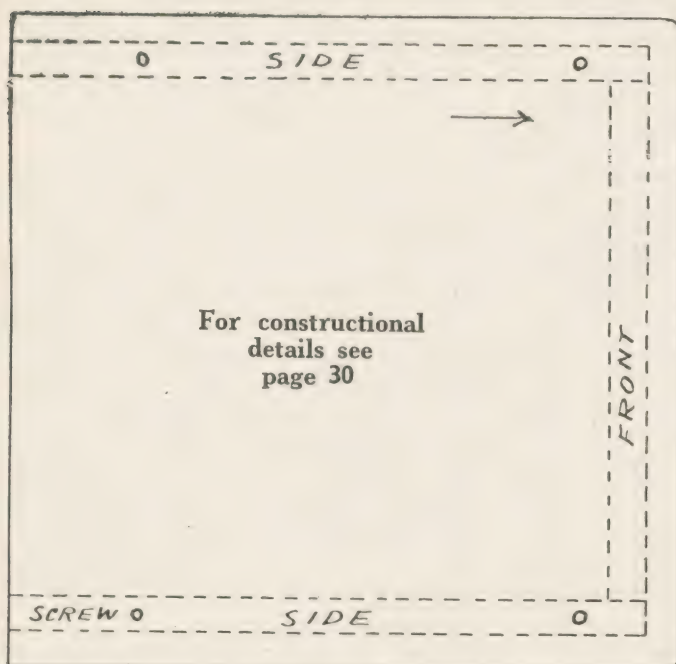
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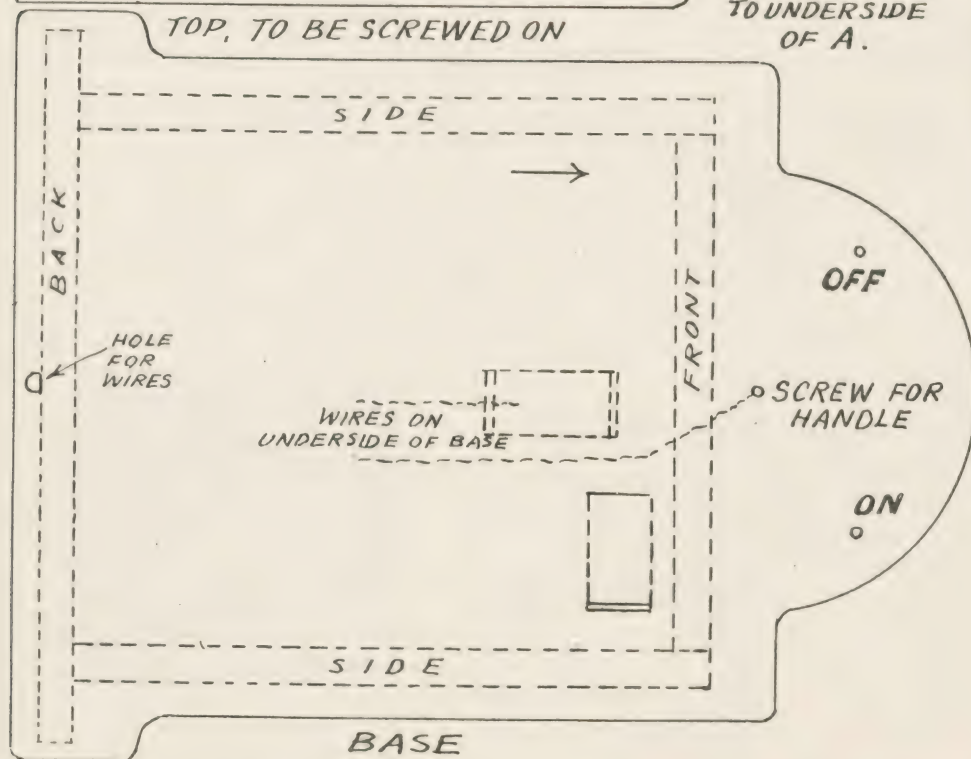
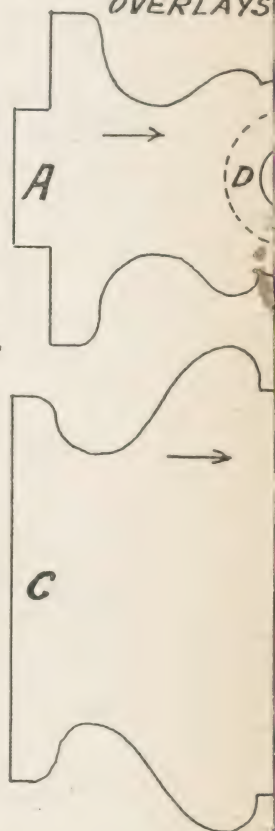
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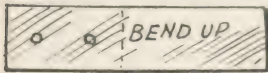
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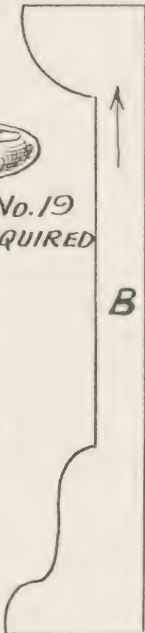
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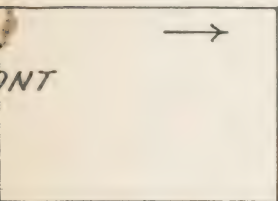
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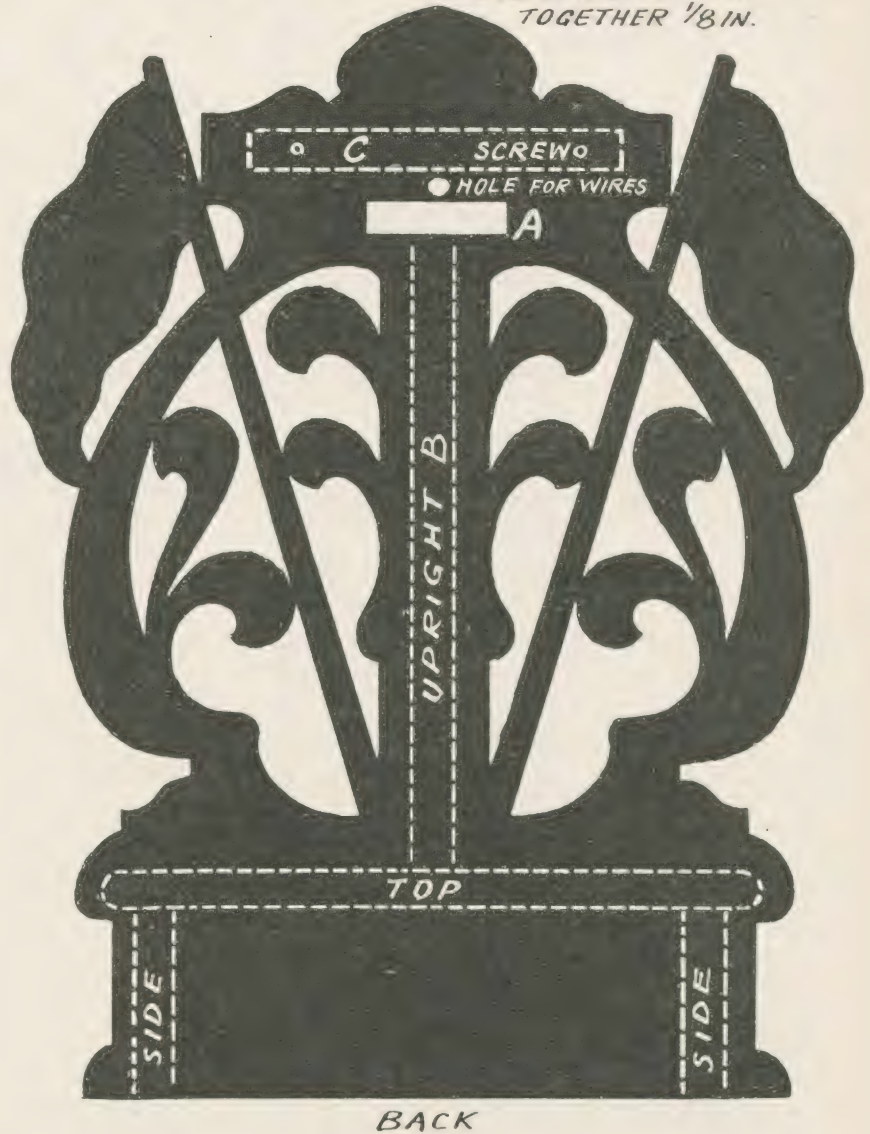
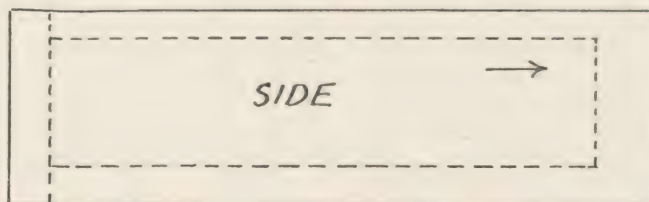
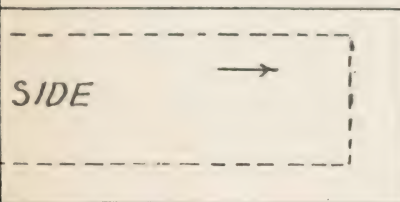
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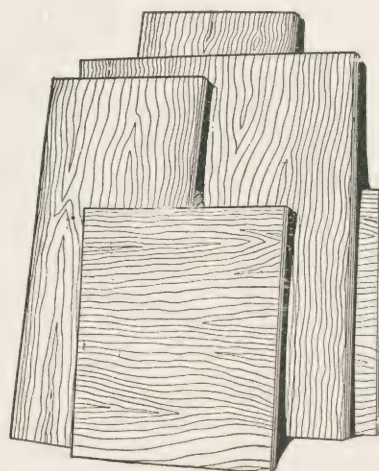


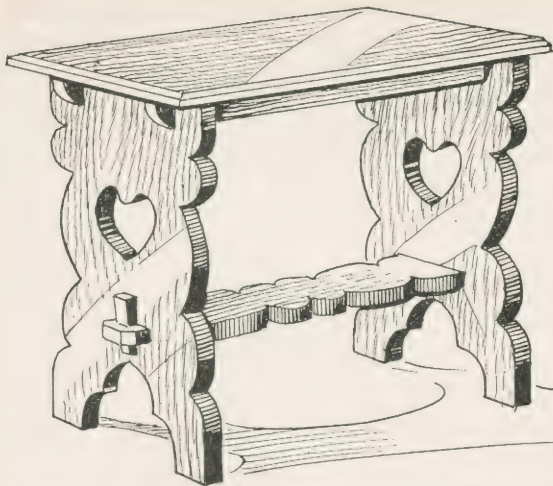
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THE stool shown in our illustration on this page has a truly "Old Time" attractiveness, and it would make a charming addition to a room. It can be made up from Spanish Chestnut, or any similar fancy wood supplied by Hobbies Ltd.

The stool is made up entirely from $\frac{1}{2}$ in. wood, and the simple shaping of the legs and the rails is done with a coarse fretsaw—a No. 6 being admirable for the purpose.

The construction of the stool is shown in the details, Figs. 2, 3 and 4. There are two legs, having at their top edges two slots into which fit the pair of rails shown at A in Fig. 2. At Fig. 3 the rails are shown ready to be dropped into their corresponding slots.

At a distance of 6ins. up from the bottom of the legs are small mortises, into which fit the tenons of the cross-shaped rail B, Fig. 2. This rail is fastened in a real old-time style, by wedges inserted through holes made at the ends as detailed in Fig. 4.

The Leg Frames

The legs should first be made, and to get an accurate outline, the method of squaring shown in Fig. 1 can be adopted.

On one of the boards measuring 18ins. long by 9ins. wide, rule a centre line down its length, and set out a series of 1in. squares as shown. Through these squares draw the outline, counting up the squares and following each to get an exact enlargement of the scale drawing shown.

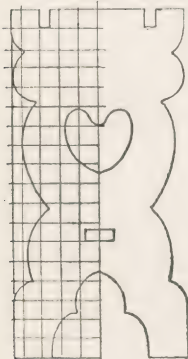


Fig. 1—The leg shape

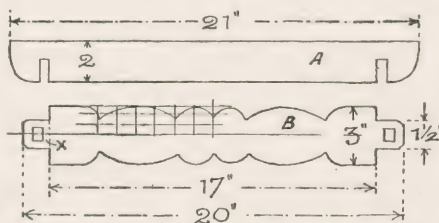


Fig. 2—Details of the rails

AN "OLD-TIME" STOOL

Draw in the mortise $\frac{3}{4}$ in. in length each side of the centre line and $\frac{1}{2}$ in. wide. The heart-shaped fret must also be carefully outlined.

Having completed this half of the outline, make a tracing of it, at the same time marking in the centre line so that when the former is turned over and placed in position again on the opposite side of the line, a complete outline is made. Lay carbon paper beneath the tracing and go over the curves carefully to give a clear and definite line for the cutting. This done, clean the edges lightly with fine glasspaper and use this cut-out as a template for drawing round to produce the other leg.

The two top rails (A) are simple in outline, but take care to get an accurate 17ins. interval between

Cutting List

All $\frac{1}{2}$ in. Material.

Two Legs	18ins. by 9ins.
Two Rails	21ins. by 2ins.
One Rail	20ins. by 3ins.
One Top	22ins. by 10ins.

the slots, and make these latter 1in. deep, and, of course, $\frac{1}{2}$ in. wide. Round off the ends as shown with the fretsaw, and smooth them up with fine glasspaper.

The lower cross rail (B) in Fig. 2 has its shaping carried out in much the same way as the legs. One quarter of the outline is done direct, the remainder being finished with the carbon paper, using both the centre lines in the process of drawing.

The Wedges

Note the length of 17ins., and see the width between the dotted line at x, Fig. 2, and the edge of the square hole at each end of the rail is $\frac{3}{8}$ in. So when the legs are put on and the tenons pushed through, these will have clearance enough for the wedges to pull the parts closely and rigidly together.

The wedges need be carefully and accurately

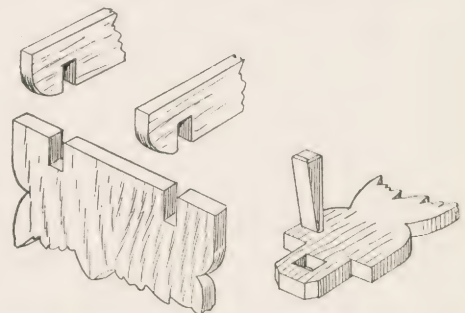


Fig. 3—The top rail fixing Fig. 4—How the wedges fit

shaped and cut. Their length is $2\frac{1}{2}$ ins., and the face width $\frac{3}{4}$ in., while the side taper is from $\frac{1}{2}$ in. at the top to about $\frac{1}{4}$ in. at the thin end.

Three of the top edges of each wedge might be chamfered off to give a good effect.

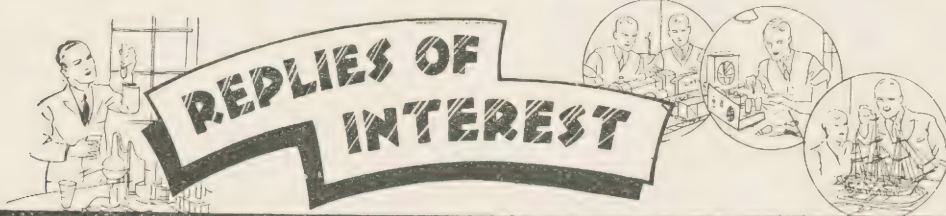
The top of the stool consists of a plain oblong piece of wood 22 ins. by 10 ins. by $\frac{1}{2}$ in., and all four of its top edges should be planed to a neat wide chamfer. The positions of the screw holes to be made in the top must be carefully measured.

The part is first laid on the rails and legs and a width of $\frac{1}{2}$ in. allowed as margin between the ends

of the rails and the edge. The same width is given between outer edges of the legs and the top. The dotted lines in Fig. 1 make this clear.

The holes should be made to come directly in the middle of the width of the rails and two to each rail should be sufficient, with one screw, perhaps, for each leg. Countersink the holes and fill them afterwards with plastic wood carefully levelled and glasspapered off.

All the wood should be cleaned off lightly, and then stained dark brown and finished either with a rubbing of linseed oil or a coat of varnish.



For Distance Swimmers

I WOULD be thankful to receive some help from you, if you would kindly tell me what is the best grease or oil for long distance swimmers to use.—(M.M.)

EXPERIENCED swimmers no longer smear their bodies with grease or oil before attempting long distances. The old habit merely clogged the pores and caused slow poisoning and cramp, since the skin was prevented from performing its normal function of exuding waste.

The points to guard against are chafing by the costume, particularly of the inner soft parts of the thighs. A little vaseline here and at the undersides of the arms, to prevent chafing (not to give "warmth") is advisable perhaps.

Marionette Drop Curtain

COULD you tell me how to make a drop curtain for a marionette show I have just built? —(M.B.)

THE simple form of drop curtain suitable for a small marionette theatre is made as follows:—

Fix a stout batten (not a lathe) to the top edge of the curtain and put a screw eye at each end. Tie cords to these screw eyes. These cords must be of sufficient length to let the curtain hang easily when down and at the same time to pass through either a similar pair of screw eyes on a fixed batten at the top (inside) of the proscenium, or through a single, and double pulley wheel fitted in a similar way. The ends of the cords then come down again and are passed round a cleat by the side of the stage opening. If an extra heavy

or large curtain is used, a third cord in the centre of the batten should be added.

Paint Remover

I HAVE recently purchased a ship's lantern (anchor type) in solid copper which has been painted over. I desire to remove paint without scratching the copper or otherwise damaging it.—(W.S.)

YOUR best plan is to use any of the numerous 'paint removers' now sold in 6d. tins (and upwards) at most oil and colour shops. This should be applied in accordance with the makers' instructions. Alternatively, if you boil the entire lamp body in soda water the paint will soften enough to be easily removable with a rag steeped in turpentine. In either case the lamp should be washed immediately afterwards in clear hot water and then repolished.

Selling Jigsaws

I HAVE been making jigsaw puzzles and want to know how I can start selling them.—(D.P.P.)

THERE are several means of disposing of the work. Most stationers and toy shops run the Jigsaws at Christmas, and will now be buying or thinking about their stocks for that period. You can take, or send, a sample of the Jigsaws to the shops, with the offer to supply further lines of the same or different pictures. They must, of course, be nicely boxed and labelled, and offered to the shopkeeper at a price which will allow him a reasonable profit. Or, of course, you can circularise your friends and let them know you can supply Jigsaws for their Christmas presents, or you can

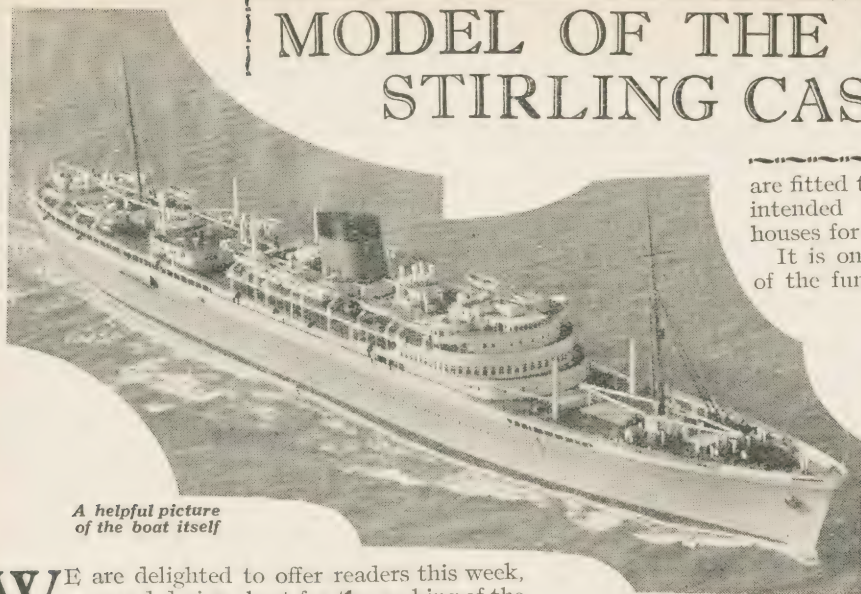
get in touch with Children's Homes, Orphanages, etc. where they might be able to buy a fairly large quantity of cheap ones for presents for the kiddies later on. Then there are the big stores who usually offer a wide range, and in this case you must get in touch with the Buyer of the actual Department concerned. Or you might put an advertisement in any local or suburban paper you think fit, offering to cut Jigsaw pictures to order. The great point is to have a few samples attractively made up in order to take them round to shops or your friends. If you know anywhere, too, where you could get a display in a window, a showcard stating "Jigsaws made to order" might be helpful also.

Reports on Stamps

HOW and where could I get a stamp examined for genuineness and also valued for price. I can get no information on this anywhere.—(A.F.S.)

YOU can get the stamp expertised by sending it to The Expert Committee of the Royal Philatelic Society of London. Probably a letter to the secretary first would tell what you have to pay for this. The address is, Capt. L. J. Gilbert-Lodge, 41 Devonshire Place, W.1. As to the value, they may tell you this; but it is very doubtful. After all, value is only what one can expect to get for the stamp if sold, but in the case of high value stamps such as this, the difficulty would be to find a purchaser, and the Committee possibly would hesitate to give an opinion.

MODEL OF THE R.M.S. STIRLING CASTLE



A helpful picture of the boat itself

WE are delighted to offer readers this week, a second design sheet for the making of the model of the "Stirling Castle." This is a popular boat sailing to South Africa, and by using the two designs and the parcel of material supplied with these instructions, a realistic model can be built up. It measures 2ft. 6ins. long when complete, apart from the base. New readers should obtain last week's issue, then read on now.

Immediately behind it comes N, of which three are required, and behind these again comes the mast which is let into the part K. Right astern come the parts M, and just in front of that the piece L. M in turn is covered by a larger piece (N) which has two projecting portions and steps which lead thereto. A detail of this can be seen at Fig. 4.

All these upper structures require to be cut and glued carefully to deck F, although the davits themselves can be left until later.

Returning to the front of F, piece G is glued on, then above this again comes H. Here are fitted some more davits—A to E—in the positions shown, whilst it will be also noted that the wire forming the sides for the promenade deck extends right through this part G, and down into the deck D. These wires can be added the same as the others, or can be put in the holes just bored in the underside of the top deck so they do not come right through.

Upper Works and Bridge

On H is fitted the piece P, at the forward end, and Q further astern. Just behind Q and in the corners there are two derrick posts glued to the deck, and if necessary let slightly into it. On the top of P comes the part R, which in turn carries the uppermost piece T. Parts U and V are superstructures fitted over the part R.

The latter is the piece forming the captain's bridge and sidewalk, with its extended portion passing right to the edge of the ship. On these extended edges of part R, two little cabin pieces

are fitted the shape shown, and intended to be the look-out houses for the navigating officers.

It is on part Q that the base of the funnel is glued (part S).

The funnel itself is cut from a piece of deal $1\frac{1}{2}$ in. thick, and shaped with a definite streamline according to the section. The original block is $2\frac{1}{2}$ ins. long and $1\frac{1}{2}$ ins. wide, sloping to the angle given on the pattern. Then make the wood elliptical with a

knife or spokeshave, and finally round it down to be bull-nosed in front, and definitely tapered towards the stern.

Fig. 6 shows the shape, as well as the finished colour for painting.

The Funnel

If you think it more simple, you can make the funnel by cutting formers of the shape indicated, then gluing round these pieces of card or stiff paper to form the funnel itself. These will give the hollow appearance better than wood, although of course, the clever woodworker will be able to hollow out the top of the solid piece to make a satisfactory job of that.

The finished funnel should slope slightly backwards, as shown in the section at Fig. 1, and for that reason the bottom edge is cut on the slope indicated on the pattern.

Remember the tallest part of the funnel is forward, and glue it down to the part S in the position shown by the dotted lines. On the part R just forward

Here is the second portion of the design and instructions for building a really striking waterline model of a very popular ship on the Eastern Route.

of the funnel, the two small pieces V and W have also to be glued to their position as indicated clearly on the respective pieces.

We can now turn our attention to the shaping of the boats, of which 14 are required. They are cut from $\frac{1}{4}$ in. material $1\frac{1}{2}$ ins. long and $7/16$ in. wide. The forward boats, of which only two are required, are a little shorter. All of them can be nicely shaped up with knife and glasspaper, according to the curves shown in Fig. 3.

A good plan is to drive a little screw eye or hook into the wood—carefully to prevent it splitting—in order to serve as a handle while the shaping is

being undertaken. The holder can afterwards be extracted, and the hole filled in before painting.

These boats should be done carefully and all made exactly the same shape, or else they will look ragged and irregular when fixed to the davits.

Davits and Derricks

As previously mentioned, the davits themselves differ in length, but their fixing is the same right through. They are glued firmly to the back, and in some cases extend across to other portions of the upper deck where they can also be fixed. A general idea of how they are fitted and finished is given at Fig. 7, where the canvas covering of the boat itself is shown painted on.

Various derrick posts and booms are also mentioned; the former being glued upright and the latter horizontal. Holders for the latter can be made of tiny pieces of wire, or utilising the proper

main deck of the boat, and this in the case of the fore part and the stern, forms the handrail which is to be painted on when the model is finished. The position of these railings, as well as the portholes, the entrance doors, etc., are all shown on the side pattern, and should be carefully marked on to the wood when they are to be painted.

Details to Note

Remember that it is largely a matter of attention to detail which is going to make this model look really good, and any attempt to rush the work will be fatal to a satisfactory completion. Do not, therefore, be satisfied until all the parts are correctly shaped, cleaned and fitted, and even then spend some time in cleaning up before undertaking the painting.

The hull itself is a light blue with an anchor painted in the aperture at the front, and, of course,

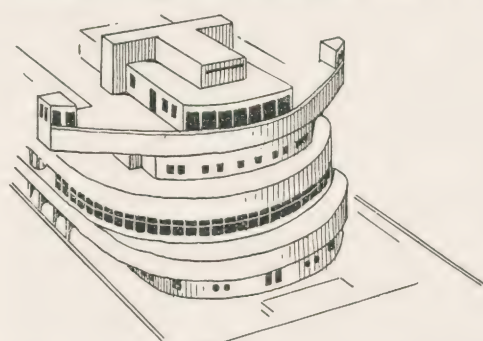
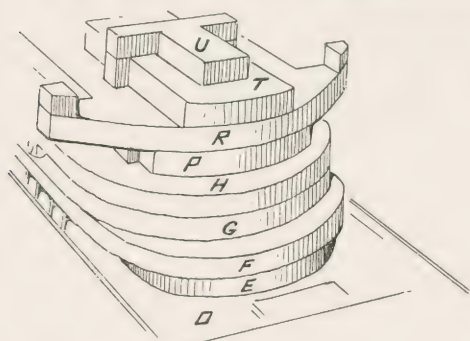


Fig. 5—A constructional view of decks and upperworks with detail showing finished parts painted

holders cut from wood according to the pattern. The rigging of the ship should not be undertaken until the rest of the work is completed, and it may be also advisable to leave the masts until the hull itself has been painted.

Plywood Sides

It will be noted, so far no sides have been added, and the hollow between the two lowermost decks remains to be filled. This is done by taking the long side, cutting it out in 1/32in. plywood and fixing it firmly round the shape provided. Notice that the pattern given is in two pieces, and mark this out carefully on the material. Even then it is best to allow a little piece of plywood at one end longer, so it can be taken off if too long when fitted. It is better to have it too long than too short.

Glue the ply down at the bow, and if necessary drive in some short fret pins, cutting off their heads, flush with the wood. Carry the plywood sides along the hull, gluing to the upper and lower deck, and to the ends of the bulkheads wherever they pass them. Continue the plywood round to the stern, and glue and nail it to the stern post.

Do the same with the plywood of the other side, finishing at the stern close up to the first piece. Pins will probably be required fore and aft to hold the sides, but as paint will cover these in the end, it does not matter.

The plywood shape will project above the actual

the portholes painted black as little dots all the way down. The railings fore and aft are also painted on. The funnel is red with a fairly narrow black band round the top.

A thin line cuts the hull at the top, and above that all the work is white except, of course, the masts, which are natural colour. The decks can be painted a natural wood colour, then the name "Stirling Castle" painted on the bows and on the stern, with her port registration—London—on the latter.

The Rigging

The rigging is carried out by means of fine cord, which is tied and glued between masts and funnel, where it is carried down to the deck, tiny screw eyes are driven in to provide a staple. All cord, of course, should be taut, except the two leads from the aerial which come down to deck T. A further cross spreader is fixed to the

MATERIALS SUPPLIED

Design Sheet No. 2163 and 2164 with full size patterns of all necessary parts. Additional copies 4d. each.

The parcel of necessary wood for the whole model including hull, sides, base, masts, etc. complete for 7/- or sent post free for 7/9.

The necessary fittings include brass screw eyes, pieces of wire and special cord for the rigging—complete for 1/3 or sent post free for 1/6.

A complete parcel of the wood and fittings—without Designs—is supplied for 9/- post free.

foremost mast from which four lines of cord converge on a single point on the top of deck R. Masts, as previously mentioned, are let into the deck by holes, and can be stiffened up underneath by arranging for blocking pieces to be put there before the sides are added.

The House flag, an illustration of which is given,

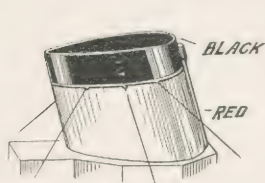


Fig. 6—The shape, fixing, and colours of the funnel

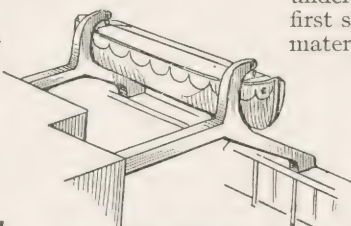


Fig. 7—How the boats are hung

is flown from the head of the aft mast, whilst the Blue Ensign is flown astern.

The whole model, of course, stands on a base, and this can be of thick plywood so built up from thinner material with an edging of deal strips. The piece supplied is 34×6 and round its edge these $1\frac{1}{4} \times \frac{3}{4}$ in. thick strips are glued on the underside. A detail of this is shown on the first sheet, and the beading is also included in the material, but glue round the edge to cover the join of the two parts.

This baseboard can be painted blue, and then have plastic wood or plasticine or something similar fixed up to make a roughened surface of the sea. The boat, of course, is glued to the centre, and a slight wavy effect can be painted on the bow with a blue-white wash astern.

POTTED HOBBIES

HINTS ON KEEPING CANARIES

THE first authentic information about the Canary is that it was imported into England from the Canary Islands in the sixteenth century, and since that time, the bird has been the pet of Royalty in its palaces, and peasants in their cottages.

There are many people of course who argue that birds were never intended to be in cages. It is true nothing is more cruel than catching and imprisoning undomesticated birds, but the canary, and several other pet birds would simply not exist in any other sort of freedom.

Centuries ago, the canary was a small insignificant bird about the size of the English linnet; the plumage was grey or olive green, but more than fifty fine specimens have evolved from it by careful breeding.

Today the breeding of canaries for exhibition is greater in England than in any other country, but there is scarcely any country in the world which does not go in for breeding canaries which are essentially British.

Like most things of the sort, the breeding of canaries for show purposes is a specialised art, which requires a great deal of time and inside knowledge of the subject, but birds kept for brightening the home, and as a hobby, are a great joy. For this purpose, you need only have an accurate knowledge of the simple

The important thing is to avoid hanging his cage in a draught, but no bird has ever died from cold, providing the temperature is not being continually changed. Nothing is worse than this.

You should see that the seed on which you feed him is clean and wholesome. Dusty food clogs the little chap's throat, as it would do anything else. Clean water should be provided for him every day, and give him a bath every other day—in the morning—never in the afternoon, otherwise, he may have to go to roost at night, before he is quite dry.

Feeding Needs

See that he has some green food every day. Watercress, lettuce, groundsel, dandelion, and chickweed are excellent, but if you do not know some of these plants, consult someone who does before feeding him with them. You may make a mistake. If these are not available, a small piece of sweet apple, or boiled carrot should be given.

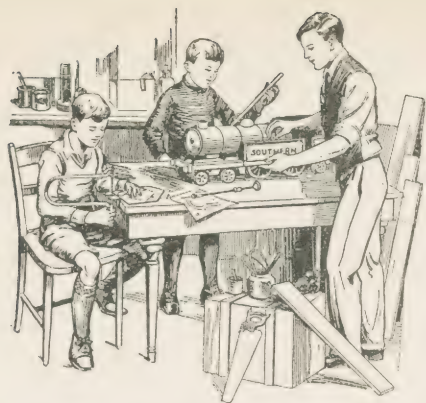
Clean his cage frequently and provide him with fresh sand on the bottom of it. Birds intensely dislike dirt, and you cannot be too careful to see that they are kept quite clean.

The natural time for canaries to moult is about the end of July, and it may be November before they sing again. During this time, they change their feathers, and a good moulting tonic, obtainable at any bird shop, should be given occasionally in the drinking water. Not quite so much green food is necessary during this period, but a prepared colour food, also obtainable from a fancier's is advisable, if you wish your pet to retain his bright plumage. At all times, but especially during the moulting season, the bird's cage should never be allowed to remain in a dusty room or one that is being spring-cleaned.



A Yorkshire Canary

rules, allied to common sense. They require a minimum of attention, and the cost is trifling.



HINTS ON SHEDS AND WORKSHOPS

Practical hints on making, fixing, lighting and arranging a workshop for the handyman. Particularly interesting to Hobbies Clubs.

MORE and more readers are forming themselves into little working clubs, so that a few hints on the layout of the actual workshop will be helpful to many. The first problem that usually arises is to obtain a workshop itself, and we are often asked for suitable dimensions, type, etc.

This, however, is impossible to deal with in an individual way because situations and circumstances vary with each different club or worker. Some have only a small shed in their own back garden, while others forming a stronger and larger financial club can afford to purchase one of the portable workshops which are now obtainable.

The latter, is, of course, the ideal, and there are a wide range of portable and sectional huts now obtainable that they can be bought usually out of the funds of the hobby club.

Suitable workshops

One point that is often overlooked in the rigging or maintenance of these workshops or sheds, is their floor and foundation. The shed should stand very rigid and firm, and if there is any play, a post about 4ft. long should be driven into the ground about 2ft. at each corner, then nailed or wired firmly to the actual shed.

With sectional sheds there is often gaping at corners or gables, etc., and this is likely to introduce draughts and coldness unless they are filled. A piece of thick cloth or an old blanket can easily be nailed round these corners, and wedged into any gap where possible. The shed, too, would be very much better if lined throughout with plywood.

This is obtainable in quite large sheets now, and is tacked on to the cross beams of the sectional sides, the joints being covered afterwards with $2\text{in.} \times \frac{1}{4}\text{in.}$ slats. If the plywood is then stained a light shade, and the covering slats a much darker colour, the effect will be pleasing as well as comfortable.

About the Floor

About the floor itself—it is important that this is damp-proof and solid. If there is a boarded floor remember it must have the air circulating underneath it in order to prevent the boards rotting. This can be done by boring holes through the outside of the shed to form what are air ventilators in ordinary brick buildings.

The floor itself must rest on solid joists to take not only the weight of the occupants, but also to allow for any heavy hammering or lumping which is done when work is in progress.

A Cement floor

An alternative is to cement the floor, and the handyman can do this quite easily. A mixture of about one cement, four sand will make a very good substance, and a long straight spline must be used to draw the cement out flat as the work proceeds.

If the area of the floor is fairly large, then a good plan is to drive in some short pegs round the edge and in the vacant space of the centre, then by laying a flat edge and a spirit level across the tops of the various pegs, you can ensure that the height of all of them is the same.

Thus, when the cement is laid—it need be only $1\frac{1}{2}\text{ins.}$ to 2ins. thick if the grain is firm—the levelling board draws it across the height of the pegs which can afterwards be withdrawn and the holes filled before the composition has set too hard.

Another point to watch is the lighting of the shed. The brightest light, of course, is from the south, but this is often dazzling and creates shadows in the time of brilliant sunshine. Workshops, engineering shops, etc., usually have all the windows facing north so there is no direct sunlight on to the work. For artificial light you should be able to rig up an electrical pendant wherever convenient. Remember, the bench will be near the window, and an electric point should be above this.

Lighting arrangements

If the shed is small, a central drop light should be sufficient, but a good plan is to have a two-way adaptor so an additional light can be plugged in and carried to the bench or any other spot required. With the bench under the window, fretmachines can stand in one of the corners, and here again the lead from the electric light is useful as bringing the bulb over the top of the work.

Put your bench and your machine in place, then rig up your lighting suitably. Get somebody to hold the light temporarily whilst you are actually at work, as this will ensure an absence of shadows at the critical point. It is, for instance, no use hanging an electric light right over the top of where you are sitting at the machine, because your head or arm will obliterate the cutting line so creating shadows.

The new Anchor Major Machine, by the way, overcomes this difficulty in an ideal method by having a spotlight actually fixed to the upper arm to show the light direct to the work.

This is not, of course, feasible in the cheaper machines, where the arms are actually moving, but no doubt many of our handymen readers can rig up a support fixed to the machine to hold the electric light.

It should be of the spotlight variety with a silvered reflector, so taking the rays direct on to the work without casting glare in the eyes.

Shelves and Chests

The sides of the workshop should contain also one or two hanging cabinets to hold the tools. Do not have these projecting from the walls more than is necessary, because they will get in the way when you are turning work round.

For instance, all the cutting tools like chisels, gouges, marking gauge, awls, as well as the various kinds of drivers, can be hung in racks in a quite shallow cupboard. If you get a very flat box, indeed, this can be rigged up quite suitably providing it has a door which is hinged on one side.

For the larger tools, it is best to have a fairly large chest as this will not only provide a suitable container, but serve as a seat or as a small bench if necessary. The benches of Hobbies, of course, have a receptacle in which the tools can be held either by the ends, or else along the back. Those having an end receptacle are open when supplied, but we have seen some very nice doors fitted on to make them dust proof.

Rusty Tools

In this case, remember to hinge the door so it opens towards the wall of the shed. If it comes the other way it will be awkward to see into the receptacle or to bring out the necessary tools.

Readers have often written us on the trouble of tools becoming rusty in their workshops. This is, of course, a very difficult problem, and one which at the moment has not been overcome.

When you buy new cutting tools and most metal tools, they are coated with a very thin film of oil or vaseline. This keeps them bright until it is removed, then the humidity of the air and the dampness of the atmosphere will in due course act on the bare metal and cause rust.

The only way out is to re-oil the tools every time they are put away, but this is hardly feasible in most cases. One trouble, however, is that careless workers leave the tools lying about on the bench, then possibly forget to close the shed door when they go out.

In consequence, the night air and possibly the early morning dew settles on the various tools and the dampness causes rust. This should not be allowed, and if you see rust is commencing,

clean it off at once with a fine grade of emery paper. You can buy a sheet at most ironmongers for 1d. or 1½d., and it is certainly an accessory worth having in the tool box.

The greatest point is to keep the tools or any metal work covered so damp cannot get to it. Some workers keep their chisels and similar tools in a roll of green baize, with little pockets for each. Plane irons and metal planes should be dealt with in the same manner, and a spot of oil on them will save a lot of worry and later rubbing with emery.

Oil and Dust

The fretmachines themselves should be kept clean and free from dust. To reduce the vibration also, a little square of leather can be placed beneath each foot, whilst the moving parts should be periodically given a drop of "3-in-1" oil or similar lubricant.

You must remember there is a good deal of sawdust flying about if you do much cutting, and this gets into the working parts, causes friction and so makes the work of treadling harder.

In the case of the Triumph, ball bearings are fitted, and these should have a periodical bath, being thoroughly cleaned with paraffin, then re-oiled to ensure their smooth running.

If, too, the short wooden pitman of the machine becomes worn, it will rattle and sound a little noisy. This can be overcome by bushing the pitman.

That is, a thin tube of metal is slipped into the hole in the wooden pitman, then the projecting spindle on the wheel slipped into that. This makes a better fit, and as the metal is working on metal, longer life is assured, and easier running is made with a spot of oil.

The bush, of course, must fit quite tightly, but can be hammered in if the pitman is first taken off and laid on the bench.

Storing wood

So far as stocks of wood are concerned, these should not be allowed to lie about just anywhere. Long board can be laid across the girders or joints which support the roof, but too large weight must not be laid there.

Shorter lengths can be kept under the bench or suitable racks made for them along the walls of the shed. It is not a good plan to lay the wood on the ground if it is likely to be at all damp, but in any case the wood should be stored neatly and weighted flat to prevent warping or twisting.

These hints will undoubtedly be interesting to many who have their own workshops, and we shall be happy to give answers to any questions of individual needs.

Every reader should belong to the Hobbies League. Interesting Booklet on request

MISCELLANEOUS ADVERTISEMENTS

The advertisements are inserted at the rate of 2d. per word prepaid. Name and address are counted, but initials or groups, such as E.P.S. or £1/11/6 are accepted as one word. Postal Order and Stamps must accompany the order. They will be inserted in the earliest issue. To sell anything except fretwork goods or those shown in Hobbies Handbook. Orders can be sent either to Hobbies Weekly, Advertisement Dept. 30/32 Ludgate Hill, London, E.C.4. or Dereham, Norfolk.

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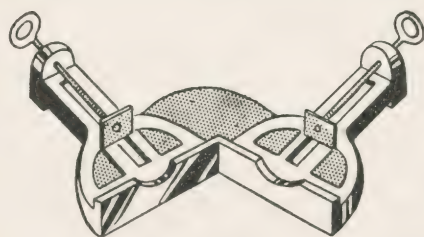
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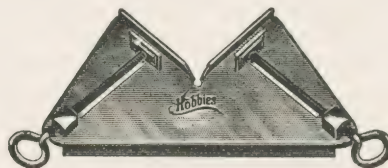
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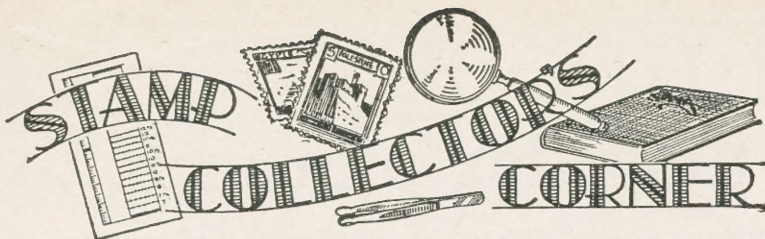
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ANIMAL STAMPS OF LIBERIA

(Continued)

CONTINUING our interesting survey of the stamps of Liberia which feature animals we deal with the crocodile.

The fifteen cents stamp of the 1921 issue is illustrated, and shows a crocodile. The size which these reptiles attain seems somewhat hard to ascertain, because reports are so frequently highly coloured, and as much as thirty feet has been reported!

So far as food is concerned they seem to take any flesh (fish form the staple diet), but any bird or beast which comes within reach of their powerful jaws is quickly seized and drowned. The crocodile's jaws are so formed that it is able to hold prey below water yet breathe itself.

What is the difference between a crocodile and an alligator? Rather a difficult question that, because in external appearance they are very similar.

The chief difference is that in the case of the crocodiles the fourth tooth of the lower jaw fits into a notch in the upper jaw, whereas the alligators have this tooth concealed in a pit.

Well, that may be a satisfactory test for a dead specimen, but it is a very doubtful matter if a person, unless he was a very ardent naturalist, would wait for the reptile to get near enough, and then open his mouth.

A better fact to know is that true alligators occur only in the Mississippi basin and in Southern China.

THE next illustration is that of a leopard, on the twenty five cents of the 1921 issue. The form and colour of these animals are well known, but possibly the feeding habits less so.

The prey is rarely eaten on the spot at which it is killed (no, that is not a pun on the leopard's spots) but dragged to some favourite retreat. What is not eaten immediately is hidden, and bodies as heavy as itself have been dragged twenty feet up a tree in order to prevent jackals from stealing it.

In the East African Game Preserves, leopards are destroyed as

vermin owing to the damage they do in killing antelopes, etc. They are so bloodthirsty they kill just for the sake of killing.

The one dollar stamp of the same set shows the Bongo, and this is the specimen of antelope to which reference has already been made. The Bongo is a rare animal. In fact, the first living specimen to be seen in England has only just arrived in the country.

It is about 7ft. long and stands about 3ft. 9ins. to the shoulder, with horns from 2ft. 6ins. to 3ft. long. It is a deep chocolate colour and has 13 white lines each $\frac{1}{2}$ in. wide round the body. It lives on leaves and twigs with a curious taste for rotten wood.

Sometimes the back is found to be quite bare, due to the fact that as it creeps through the dense undergrowth when it has to lower its horns on to its back. The constant wear occasioned by these has worn the skin, or rather the hair, away.

Readers will have noticed that in each description of the animals found on these stamps the food of the beast has been given.

This is not because it is anti-



The Crocodile



The Leopard

the Hornbill and the Elephant respectively.

The 1923 set shows on the fifteen cent the hippopotamus, and on the twenty cents another picture of the antelope, while on the twenty five cents we are introduced to another animal the buffalo. Buffaloes live in large herds, preferably in reed beds or bush country, feeding on grass and corn. During the day they rest in the shade, at evening they drink and wallow, after which they feed until midnight, when they rest and chew the cud.

They get badly infected with ticks, so birds are their constant companions, and are doubly valuable to the beasts, because they not only feed off the ticks, but also serve as sentries. On the approach of danger the birds fly away and so warn the buffalo of the enemy.

Buffalo hunting is a very dangerous sport, as the animal charges with its head straight out and watches its foe the whole time.

LASTLY we come to one of the reptile family, and this is shown on the special registration stamps of 1921—the Puff Adder.



The Puff Adder

This is a snake which grows to four or five feet, sluggish, heavily built creature common in the drier areas of Africa.

Its colouration harmonises so well with the ground that most of the accidents are due to people failing to notice the reptile until they tread upon it. From the venom of the snakes the poison which is used to tip arrow heads is made.

The name is derived from the habit of inflating themselves with air and expelling it with a loud hissing sound. This forms a warning to possible enemies, in just the same way as the rattles of a rattle snake.

pated that readers will want to keep any of these animals as pets—(imagine having a pet hippo in the drawing room!) but because knowing about the food it gives anyone a much better chance of finding or studying an animal.

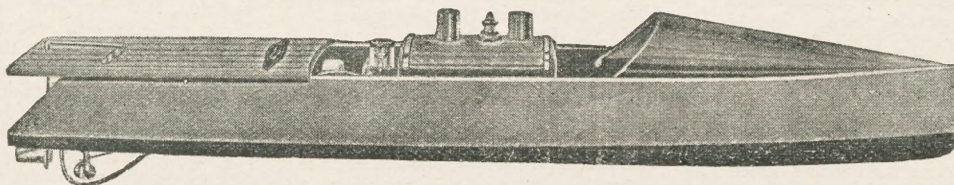
Find a place where the food abounds then there is a good likelihood of finding the animal, but it would be useless to seek an animal where it cannot obtain its food.

THE two and five dollar stamps of the set about which we are concerned (the 1921), have already been mentioned in previous articles, because they show

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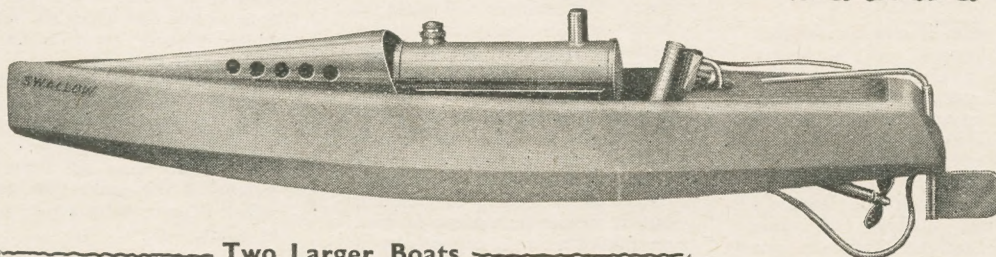
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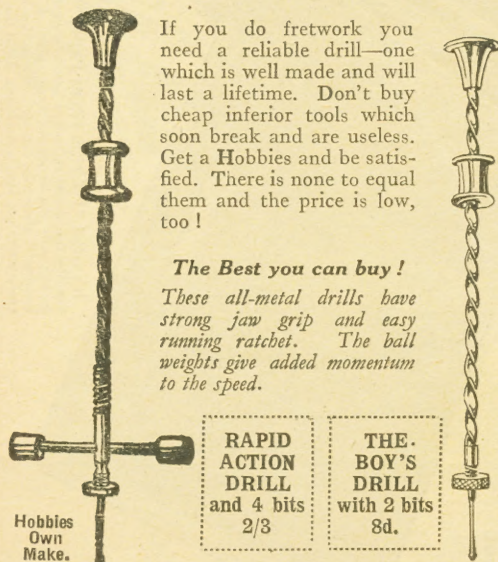
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